Name(s) of Risk Team Members: J. Scott, J. Scaduto		Point Value → Parameter ↓			1			2	3 4						5		
Area/Facility # (if applicable): Area Wide FRA 14.05			Occupancy or Use	≤once/year			ar		≤once/month	≤once/week ≤once/		/shift		>once/shift		e/shift	
Area/Facility # (if applicable): Area-Wide FRA 14-05  Area/Facility Description: PHOBOS Area-Wide			Severity	First Aid Only			nly	ľ	Medical Treatment	I Treatment Lost Time Partial Di						Death or Permanent Disability	
Approved by: E. Lessa	urd	Date: 3-21-05 Rev.#: 0	Likelihood	Extremely Unlikely			ılikely		Unlikely Possible Proba			pable			Multiple		
Reason for Revision (i	f applicable):									Comments:							
					Вє		Additi ntrols					A	After A	ddition trols	onal		
Physical Item or Activity	Hazard(s)	Control(s)			Occupancy A	Severity B	Likelihood C	Risk* AxBxC	Control(s) Added to Reduce Risk			Occupancy A	Severity B	Likelihood C	Risk* AxBxC	% Risk Reduction	
Primary Beam	High hazard ionizing radiation	ACS; PASS; postings; crash button classification; shielding; dosimeters FS support, RWP			1	5	2	10									
General Area Radiation Residual Radiation, External Radiation	Ionizing radiation	Postings, training, shielding, RCD s RWP, work planning, procedures, o	<i>,</i> ,	nt,	4	1	2	8									
Electrical Equipment & Power Supplies BNL Class A & B <250 V AC; <1000V DC	Shock or electrocution	All equipment is listed or reviewed inspections; disconnected cable pol with applicable codes; procedures; drawings; LOTO; Kirk keys; worki hot permits; ASSRC/ESRC reviews and technicians; cabinet interlocks; guarding; work planning; GFCI; greenergency procedures	icy; installations comp training; distribution ng s; qualified electricians postings; locked areas	S	5	4	2	40	training, and postir	ards compliance with NFPA 70 ag requirements for all personne oval of all equipment required cove it.	el, UL	5	3	2	30	25%	
Electrical Equipment & Power Supplies BNL Class C <600 V AC; <6000 V DC	Arc blast; burn	Procedures, training, PPE, all equip by CEE, tier 1 inspections, disconninstallations comply with applicable drawings, LOTO, Kirk keys, working planning, GFCI, grounding standard and emergency response, qualified technicians, cabinet interlocks, guar postings, locked areas.	ected cable policy, e codes, distribution ng hot permits, work ds, emergency procedu electricians and		3	5	2	30	training, and postir	ards compliance with NFPA 70 ag requirements for all personne oval of all equipment required cove it.	el, UL	3	4	2	24	20%	
Electrical Equipment & Power Supplies BNL Class C <600 V AC; <6000 V DC	Shock or electrocution	All equipment is listed or reviewed inspections; disconnected cable pol with applicable codes; procedures; drawings; LOTO; Kirk keys; worki ASSRC/ESRC reviews; qualified e technicians; cabinet interlocks; post guarding; work planning; GFCI; greenergency procedures; two-person	icy; installations comp training; distribution ng hot permits; lectricians and tings; locked areas; ounding standards;		2	5	2	20	training, and postir	ards compliance with NFPA 70 ng requirements for all personnoval of all equipment required cove it.	el, UL	2	4	2	16	20%	

Electrical Disconnects And Switches	Arc blast; burn	Procedures, training, PPE(see controls above, all apply to this)	2	4	3	24	BNL working towards compliance with NFPA 70E PPE, training, and posting requirements for all personnel, UL or equivalent approval of all equipment required or on site experts to approve it.	2	3	3	18	25%
Electrical Disconnects And Switches	Shock or electrocution	All equipment is listed or reviewed by CEE; Tier 1 inspections; disconnected cable policy; installations comply with applicable codes; procedures; training; distribution drawings; LOTO; Kirk keys; working hot permits; qualified electricians and technicians; cabinet interlocks; postings; locked areas; guarding; work planning; GFCI; grounding standards; emergency procedures; two-person rule for hot work	2	5	2	20	BNL working towards compliance with NFPA 70E PPE, training, and posting requirements for all personnel, UL or equivalent approval of all equipment required or on site experts to approve it.	2	4	2	16	20%
Motor Control Centers; Panels And Wall Sockets	Shock or electrocution	All equipment is listed or reviewed by CEE; Tier 1 inspections; disconnected cable policy; installations comply with applicable codes; procedures; training; distribution drawings; LOTO; Kirk keys; working hot permits; ASSRC/ESRC reviews; qualified electricians and technicians; cabinet interlocks; postings; locked areas; guarding; work planning; grounding standards	4	5	2	40	BNL working towards compliance with NFPA 70E PPE, training, and posting requirements for all personnel, UL or equivalent approval of all equipment required or on site experts to approve it.	4	4	2	32	20%
Motor Control Centers; Panels And Wall Sockets	Arc blast; burn	PPE; training; procedures	4	4	2	32	BNL working towards compliance with NFPA 70E PPE, training, and posting requirements for all personnel, UL or equivalent approval of all equipment required or on site experts to approve it.	4	3	2	24	25%
Electrical Powered Hand Tools	Shock or electrocution	All equipment is listed or reviewed by CEE; Tier 1 inspections; procedures; training; labeling; work planning; GFCI; grounding standards; double insulation	4	3	3	36						
Extension Chords; Temporary Wiring And Power Strips	Shock or electrocution	All equipment is listed or reviewed by CEE; Tier 1 inspections; disconnected cable policy; installations comply with applicable codes; procedures; training; distribution drawings; qualified electricians and technicians; GFCI; grounding standards, proper uses understood.	4	3	3	36						
Vacuum	Ear damage	Postings; PPE; maintenance; training; work planning; ASSRC reviews; procedures; Tier 1 inspections; Chief ME reviews; vacuum windows covered during handling; use of industry standards; design reviews, LOTO, PPE	3	4	2	24						
Vacuum	Being struck by an object such as flying debris	Postings; PPE; maintenance; training; work planning; ASSRC reviews; procedures; Tier 1 inspections; Chief ME reviews; vacuum windows covered during handling; use of industry standards; design reviews, LOTO, PPE	3	4	2	24						
Magnetic Field	Being struck by an object due to adverse mechanical force exerted on ferromagnetic objects and or to electronic/medical implants	Barriers; warning systems; postings; training; ESRC review; work planning; procedures; Tier 1 inspections; magnetic safety reviews; medical exams	1	4	2	8						
Lighting	Being struck against an object, such as a carpenter walking into a door frame, due to poor visibility	Tier 1 inspections; maintenance; emergency lighting; temporary lighting, work planning, housekeeping policy.	3	2	3	18						
Lighting	Falls on same level	Tier 1 inspections; maintenance; emergency lighting; temporary lighting, work planning, housekeeping policy	3	3	3	27						
Lighting	Being struck by an object due to a material handling mishap	Tier 1 inspections; maintenance; emergency lighting; temporary lighting, work planning, housekeeping policy	2	3	3	18						

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Material Handling	Being struck by an object due to improperly secured material; loss of control	Work planning; equipment specific training; work area barricades and controls; PPE; clamps; straps; vices; fixtures, equipment inspections, procedures.	3	3	3	27	
Chemical Handling	Eye exposure	Procedures; compliance with regulations; training; CMS inventory; MSDS; volume controls; PPE as required; locked or controlled areas; postings; labeling; proper containers; segregation; proper spill cleanup equipment available; Tier 1 inspections	3	4	2	24	
Chemicals	Inhalation exposure	Procedures; compliance with regulations; training; CMS inventory; MSDS; volume controls; PPE as required; locked or controlled areas; postings; labeling; proper containers; segregation; proper spill cleanup equipment available; Tier 1 inspections	3	3	2	18	
Chemicals	Fire; explosions	Procedures; compliance with regulations; training; CMS inventory; MSDS; volume controls; PPE as required; locked or controlled areas; postings; labeling; proper containers; segregation; proper spill cleanup equipment available; Tier 1 inspections	3	2	2	12	
Manual Material Handling	Overexertion – injuries caused by excessive lifting, pushing, pulling, holding, carrying or throwing of an object	Gloves; hardhat; handcarts; dollies; training; safety shoes, weight limits, work planning.	4	3	3	36	
Use Of Hand Tools	Being struck by an object, such as flying chips	PPE; training; maintenance; Tier 1 inspections; UL listed equipment; pre-inspections	4	2	3	24	
Use Of Hand Tools	Being struck against an object, such as sharp surfaces	PPE; training; guarding	4	2	3	24	
Use Of Hand Tools	Becoming caught in or compressed by equipment	Equipment specific training; guarding; PPE; postings	4	2	3	24	
Walking – Working Surfaces	Falls on same level	PPE; Tier 1; work planning; P.E. scheduled maintenance; internal and external audits; posting; labeling; training; barriers; communication; lessons learned, procedures, PPE(safety shoes, rubber spikes for winter use). Heightened awareness and repair of walking and working surfaces.	5	4	2	40	
Working Environment	Poor air quality; mold	HVAC; facility maintenance; Tier 1 inspections, housekeeping policy, IH sampling if required.	5	2	2	20	
Work At Heights	Falls to lower level, such as falling from a ladder or over a railing	Postings; barriers; fall protection; maintenance; training; work planning; procedures; Tier 1 inspections; PPE; approved scaffolding and platforms; approved ladders; antislip surfaces	2	5	3	30	
Water	Being struck by an object due to a pressure release	Postings; maintenance; PPE; training; work planning; ASSRC review; procedures; Tier 1 inspections; PLC monitoring and interlocks, LOTO, qualified personnel	4	1	3	12	
Water	Contact with temperature – extremes that result in such injuries as heat exhaustion, frost bite or burns	Postings; maintenance; PPE; training; work planning; ASSRC review; procedures; Tier 1 inspections	4	3	2	24	
Tours	Internal or external radiation	Postings; trained escorts; RCD concurrence to enter radiation areas; RWP; work planning; training waiver; red TLD; BNL minors policy	3	1	2	6	

Transformer And Switch Yards	Shock or electrocution	All equipment is listed or reviewed by CEE; Tier 1 inspections; installations comply with applicable codes; procedures; training; LOTO; qualified electricians; postings; locked areas; work planning; grounding standards; emergency procedures; grounding before work start	2	5	2	20	BNL working towards compliance to NFPA 70E PPE-training-posting requirements, all equipment UL or equivalent approved, on-site experts to review and approve existing equipment.	2	4	2	16	20%
Transformer And Switch Yards	Arc blast	PPE; procedures; training; qualified electricians and technicians( all above rules apply)	2	4	2	16	BNL working towards compliance to NFPA 70E PPE-training-posting requirements, all equipment UL or equivalent approved, on-site experts to review and approve existing equipment.	2	3	2	12	25%
Standby Generators	Shock or electrocution	All equipment is listed or reviewed by CEE; Tier 1 inspections; disconnected cable policy; installations comply with applicable codes; procedures; training; distribution drawings; LOTO; Kirk keys; working hot permits; ASSRC/ESRC reviews; qualified electricians and technicians; cabinet interlocks; postings; locked areas; guarding; work planning; grounding standards; emergency procedures, PPE	2	5	2	20	BNL working towards compliance to NFPA 70E PPE-training-posting requirements, all equipment UL or equivalent approved, on-site experts to review and approve existing equipment.	2	4	2	16	20%
Standby Generators	Noise	Hearing protection( all above applies as well)	2	4	2	16						
Radioactive Sources	Internal or external radiation	Training; BNL and C-AD source custodians; source inventory; shielding; locked boxes; leak checks; posting; dosimeters; Chipmunk calibration procedures; locked cage for Chipmunk source	2	1	2	4						
Egress	Impaired egress	Tier 1; work planning; skill of craft; P.E. scheduled maintenance; internal and external audits; posting; labeling; training; barriers; communication; internal processes; lessons learned; life safety codes; emergency preparedness, housekeeping policy	5	3	3	45						
Pressurized Systems	Being struck by an object due to a pressure release	Postings; PPE; maintenance; training; work planning; ESRC/ASSRC reviews; procedures; interlock systems; certification/testing of pressure related equipment; Tier 1 inspections; LOTO; C-AD Chief ME reviews; codes and standards usage, LOTO	2	2	2	8						
Cryogenic	Being struck by an object due to a pressure release	Postings; maintenance; training; work planning; LOTO; Cryogenic Safety Committee /ASSRC reviews; procedures; PPE; interlock systems; Tier one inspection; pressure testing	4	2	2	16						
Cryogenic	Contact with temperature – extremes that result in such injuries as frost bite or burns	Postings; maintenance; training; work planning; LOTO; Cryogenic Safety Committee /ASSRC reviews; procedures; PPE; interlock systems; Tier 1 inspection	4	3	2	24						
Computer And Office Machine Usage		BNL SHSD ergonomic reviews; training; use of ergonomically designed equipment, awareness of frequent break requirements.	5	3	3	45						
Batteries/UPS	Molten spray	PPE; procedures; training, work planning, tier 1 inspections	4	2	2	16						
Limited Access Areas	Impaired egress	Tier 1; work planning; skill of craft; training; barriers;	2	1	3	6						
Cryogenic Systems	Oxygen deficiency	ODH analysis; ODH exhaust fans; training; remote/local audible/visible alarms; Fire/Rescue group response; Cryosystems designed to consensus codes; procedures; work planning; LOTO; inspections; PPE as required; postings and labeling; Cryogenics Safety Committee/ASSRC reviews.	1	3	2	6						
Chemical	Beryllium exposure to personnel	Postings, training, PPE, work planning, BURF,	3	2	2	12						

*Risk:	0 to 20	21 to 40	41-60	61 to 80	81 or greater
	Negligible	Acceptable	Moderate	Substantial	Intolerable